



***HX8-8s***

***HX8-8u***

***HX9-8u***

***HEADROOM Broadcast***

***E1 Cross-Connect***

***Manual***

This document describes HEADROOM Broadcast HX8/HX9 switch

All features described here are valid in versions and with options as follows:

- Rack/Netzwerk-Controller Software-Version 1.0
- Modul-Controller Software Version V1.01.000
- MIB Version V1.0 (HEADROOM\_HX8-8s\_V1.0.my)

More Downloads under: <http://www.headroom.de/downloads>

HX8 HX9 manual EN

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# 1 Mechanical design

19" cabinet 1 RU with modular Hot-Swap power supply modules.

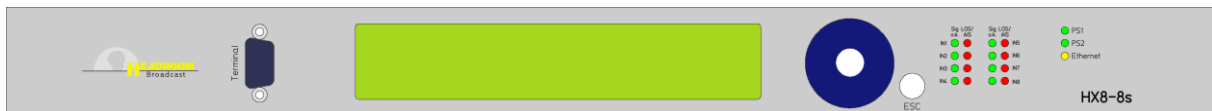
HX8-8s E1 on RJ45 bal. 8 inputs, 8 outputs.

HX8-8u E1 on BNC 75Ohm unbal, 8 inputs, 8 outputs

Der HX9-8u E1 on BNC 75Ohm, unbal, 9 inputs, 8 outputs

## 1.1 Front panel

The front panel shows the Control LED, the LC Display, a cursor switch (UP/DOWN, L/R, O.K. and ESC) and the subd connector for a PC control via RS 232.



## 1.2 Rear panel

The rear provides all connectors and interfaces for signals and the Management-Interface.

### HX8-8s

**IN1-8** E1 signal input RJ45 balanced

**OUT1-8** E1 signal output RJ45 balanced

### HX8-8u

**IN1-8** E1 signal input BNC 75 ohms unbalanced

**OUT1-8** E1 signal output BNC 75 ohms unbalanced

### HX9-8u

**IN1-9** E1 signal input BNC 75 ohms unbalanced

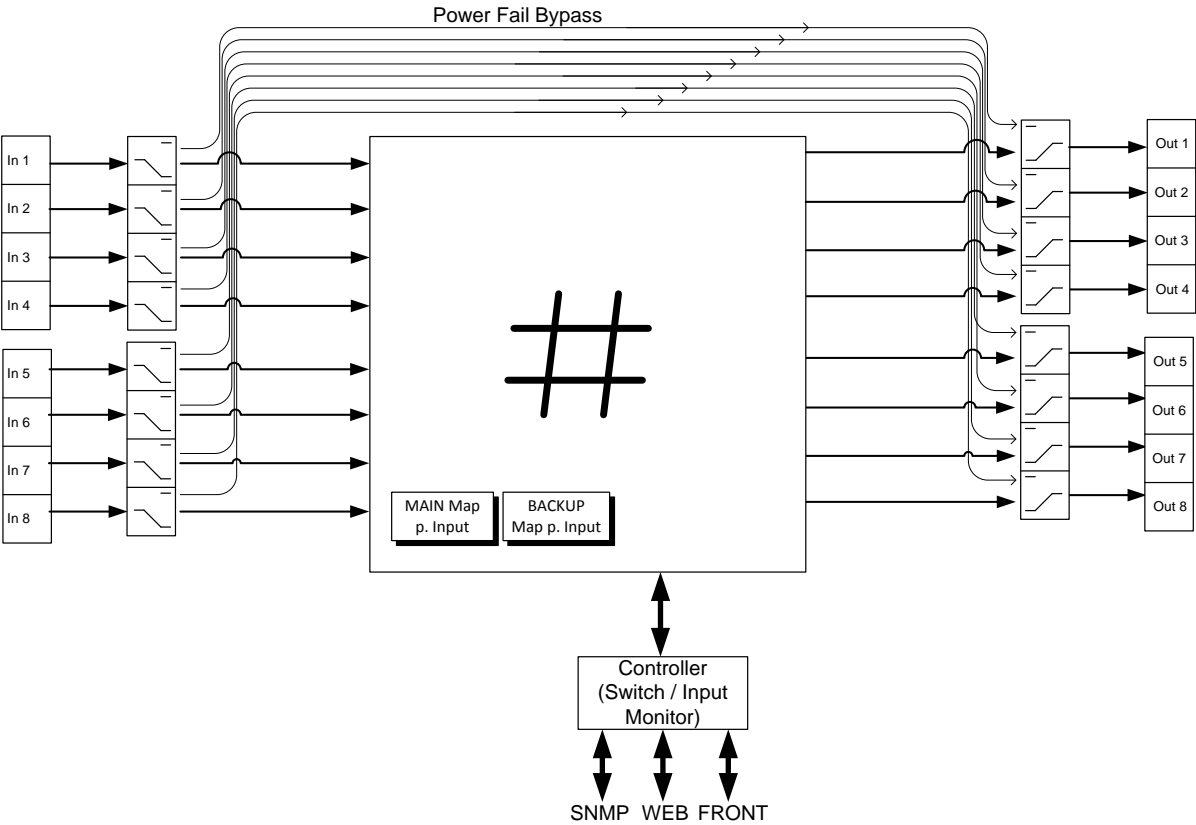
**OUT1-8** E1 signal output BNC 75 ohms unbalanced

### Allv Versions

**Eth** 100/10Base-T network

Power supply plug-in modules for redundant supply, AC and DC and mixed supply available.

1.3 Block diagram



## 2 Function

### 2.1 Settings and Status display

All settings of HX8/HX9 can be made with 3 equivalent interfaces: Web Interface (chap. 5), SNMP (chap. 6) and front panel operation (chap. 3).

However, network parameter settings are possible via Web-Interface or via Terminal (RS-232 or Telnet; chap. 4) only.

### 2.2 Signal detection

All 8 E1 inputs are checked permanently for LOS and AIS. Detected input failures are provided by traps (if not disabled). The HX9-8u checks all 9 inputs accordingly.

### 2.3 Cross Connect

The Cross-Connect design allows assigning each output to one input. Each output assignment is independent from the other..

Outputs may be disabled or may send a permanent "AIS".

### 2.4 Backup Map

Each output has a backup input assignment which is activated in case the initially selected input gets faulty. These assignments cover all 10 functions - inputs 1-8 (1-9), Off or AIS. The backup input assignment is active in case of the input signal failure or received AIS. It is possible to deactivate the AIS detection for all inputs in one step.

6 examples for different Output 1 assignments, in case an error occurs at input no.1

Main Setting	Input1	Off	Input1	Input1	Input1	AIS
Backup Setting	Input2	Dc	Off	AIS	Input1	dc
output	Input2	Off	Off	AIS	Input1	AIS

### 2.5 Power-down bypass assignment

In case of a complete power loss, all inputs are relay-based connected to the same number output. (Input 1 to Output1, Input2 to Output2 etc. )

### 2.6 AIS detection

HX8/HX9 applies extended-AIS-detection to avoid false alarms with compressed/ encoded audio/ video payload signals. Signals are monitored for more than 4096 consecutive „ones“.

## 3 Display, keys and LED on the front panel

### 3.1 LED indicators

**PS1** green, **on** if psu no.1 is o.k.

**PS2** green, **on** if psu no.2 is o.k. (optional)

**Eth** yellow, **on** if the network port is connected to an active interface, no IP conflict present

Two Input Status LED for each Input (1-8) / (1-9)

**o.k.** green, **on** if the signal is valid but no AIS detected

**LOS/AIS** red, **on** if no valid signal detected, **flashing** if AIS detected

### 3.2 Front panel operation

The Front panel option allows to control the cross connect via display and cursor switch. Select a menu point via left/ right, then enter (central button) or return via ESC. Numerical entries are made by the Up/ Down buttons.

#### 3.2.1 Status Menu

The Status Menu presents the current Input-Output assignments. A flashing Status LED indicates the Backup assignment.

After Power-up, the HX8/ HX9 starts with this menu.

#### 3.2.2 Main menu

The main menu allows entering the Cross-Connect Maps, the Status Menu or the Info screen (IP Address, Firmware Versions).



## 4 Quick Start Network

1. Use a 1:1 Sub-D9 cable and connect the control PC with the terminal connector at the front panel.

2. Run a Terminal program (e.g. HyperTerminal) with the parameters:

Baud rate: 9600

Data bits: 8

Parity: none

Stop bits: 1

Handshaking: none

3. When connected, push "Enter". The device prompts with '#>'.  
If you select 'info' and push "Enter" you get a list of implemented commands. If you enter a specific command (Enter) the specific values/ parameters are displayed. Help is provided by entering the specific command, one space and "?" .

4. If you like to modify the IP address, type the command and Enter each line separately".

Example

```
network ip=192.168.100.25
```

```
network submask=255.255.255.0
```

```
network gateway=192.168.100.1
```

Each individual command is responded by the HX8/HX9 with the request for a re-start ('reboot'). **However, this is required once only after the last input.**

You may change one or two parameters only if the remaining one(s) is o.k Simply "Enter" and the system will reboot.

5. The 'snmp' command **allows changing the** Community-Strings, Port and Trap-Targets, Setting of time synchronization is achieved with 'sntp'.

6. A 'reboot' is required once at the end of setting changes, even though the HX8/HX9 asks you to prompt at each command.

7. When you connect the HX8/HX9 to the network, it can be controlled by SNMP, Web and Telnet. The Default-Password and user name are 'admin'.

## 5 Web interface

The Web-Server ist is registered with Standart-Port 80 on the selected IP .  
(Default: 192.168.100.200).

Default Password & Login values are: **admin** & **admin**

## 6 SNMP

The HX8/HX9 supports SNMP V.2c.

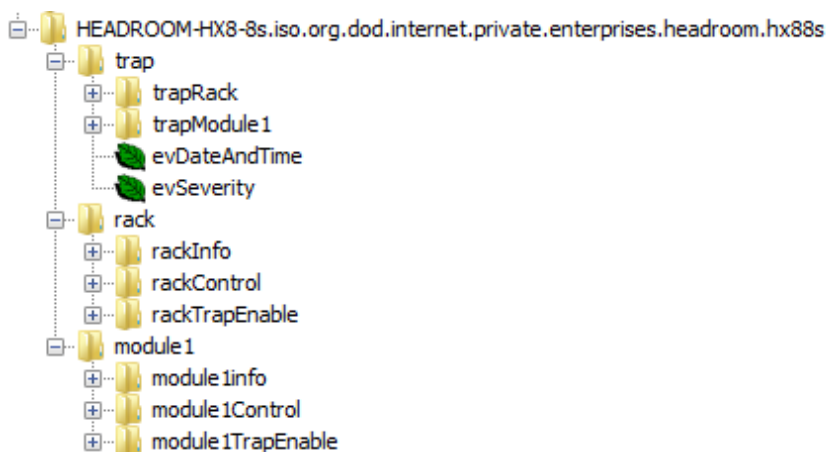
### 6.1 MIB

Please verify that you run the current MIB Version.

In case you do not have the current version (file name is HEADROOM\_HX8-8s\_V1.0.my) please contact: support@headroom.de.

The MIB of the HX8 (HX9) shows 3 sub menus: Trap, Rack and Module1.

#### 6.1.1 Root

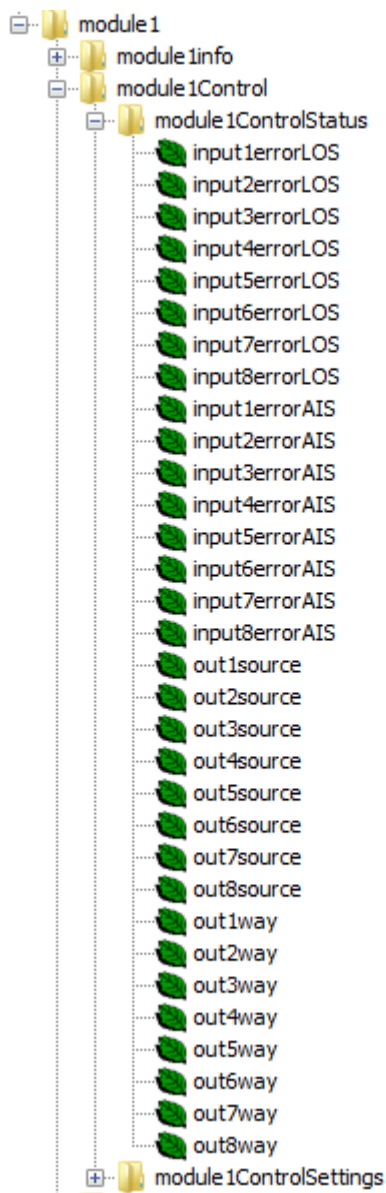


**trap** - Definition of device traps

**rack** - Information and Control (Real-time State messages and Settings) and general device Trap-Enables (Network, power supplies etc.)

**module1** - Information and Control (Real-time State messages and Settings) and Cross-Connect circuitry Trap-Enables.

## 6.1.2 Cross-Connect Real-time State messages



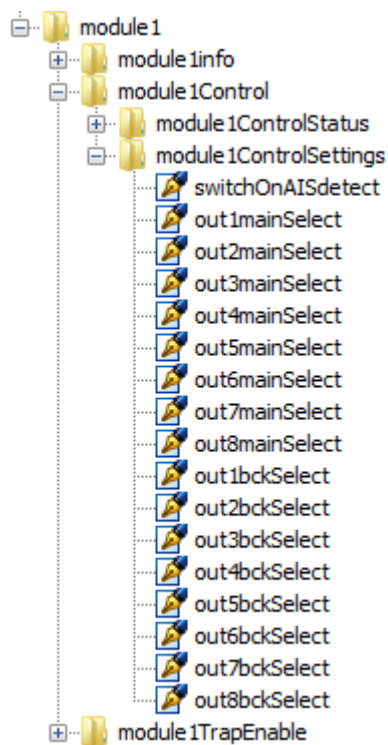
**input(1-8)errorLOS** - [o.k.; error] - Loss of Signal of inputs 1 to 8

**input(1-8)errorAIS** - [o.k.; error] - AIS-Erkennung of inputs 1 to 8

**out(1-8)source** - [input1-8; AIS; off] – current sources of output1 to output8 signals

**out(1-8)way** - [main; backup] – current Map assignments at output1 to output8

### 6.1.3 Cross-Connect Settings



**switchOnAISdetect** - [enable; disable] – general setting, switch when AIS is detected at the input (Main --> Backup)

**out(1-8)mainSelect** - [input1-8; AIS; off] - Main-Map settings for output1 to output 8

**out(1-8)bckSelect** - [input1-8; AIS; off] - Backup-Map settings for output1 to output 8

## 6.2 Traps

All Traps are Notifications. Traps look like this:

OID	Name	Objects, Values
.1.3.6.1.4.1.25362.37.0.2.1.1	trapInput1errorLOS	<i>sysDescr, sysName, sysLocation, evDateAndTime, input1errorLOS, evSeverity</i>

All Traps may be en-/disabled. After a cold-start of the Rack-Controller, the Cold-Start-Trap (SNMPv2) and all *enabled* Traps with the current states are sent..

Changes of Cross-Connect-Settings (module1ControlSettings in the MIB) can generate Traps also if enabled (default: disabled). By this, the central management can monitor local front panel entries or web control entries.

## 7 Pin-Outs

### 7.1 E1 RJ45 (HX8-8s)

INPUTS	
RX+	Pin 1
RX-	Pin 2
TX+	<i>Pin 4*</i>
TX-	<i>Pin 5*</i>
GND	Pin 8

OUTPUTS	
RX+	<i>Pin 1*</i>
RX-	<i>Pin 2*</i>
TX+	Pin 4
TX-	Pin 5
GND	Pin 8

***\* TX pins at the inputs and RX pins at the outputs are open by default. After removing the device top cover, you may establish a return path from output1 to input1, , output 2 to input 2 etc. via Jumper.***